Space Weather Forecast

Issued on Thursday, 17 August 2023 at 01:11 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of R1/Minor Radio Blackouts throughout. Slight Chance of Minor Geomagnetic Storm conditions on Day 1 (17th).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low with only low level Common-class flaring observed over the past 24 hours. There are currently nine sunspot regions on the visible disc. A region which has just passed centre disc in the northern hemisphere is the largest group. The main spots increased in size and then fragmented into several smaller spots, but have then re-combined again. Another region in the far northeast appears to contain a fairly simple magnetic configuration despite its moderate size with no apparent change in appearance. A further region in the southeast has continued to develop, and is now the second largest region on the disc. It also has a slightly more magnetically complex structure than the other regions. All the other regions on the disc are currently small or simple, with no significant change observed.
No Earth-directed Coronal Mass Ejections (CMEs) were observed in the available imagery.

Solar Wind / Geomagnetic Activity: The solar wind was characterised by a possible transient arrival shortly after midday. However, wind speeds remained slow, between 270 and 330 km/s. The Interplanetary Magnetic Field strength was weak, but increased to Moderate from 16/1300 UTC. The important north-south component generally varied weakly, but a moderate period of negative orientation was sustained 16/1250-1950 UTC. The net result of the solar wind parameters was for Quiet to Unsettled geomagnetic activity (Kp 1-3).

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar Activity is currently Low. There is a daily Chance of activity rising to Moderate levels with isolated Moderate-class flares. Western solar horizon departures are expected to be roughly compensated for by eastern arriving groups, giving an estimated flat trend on significant flare probabilities.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs currently in the forecast. Earth is forecast to be effected by up to two coronal hole fast winds on days 1 and 2 (17th and 18th). Slightly elevated to elevated solar winds are expected, before declining to ambient levels on days 3 and 4 (19th and 20th). Quiet to Unsettled geomagnetic activity is likely to become Active at times on day 1 (17th), with a slight chance of a Minor Storm interval. Predominantly Quiet activity is expected by days 3 and 4 (19th and 20th).

Energetic Particles / Solar Radiation: No solar radiation storms are expected.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	30	30	30	30
Very Active	R3 to R5 X	No	2	2	2	2

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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